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DAVID G. LATWESEN, PH.D.
WELLS, ST. JOHN, ROBERTS, GREGORY & MATKIN P.S.
601 W. FIRST AVENUE,
SUITE 1300
SPOKANE, WA 99201-3828

EXAMINER

WILKINS III, HARRY D

ART UNIT

PAPER NUMBER

1742

DATE MAILED: 07/22/2003

17

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/912,652

Applicant(s)

SEGAL ET AL.

Examiner

Harry D Wilkins, III

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 June 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 37-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 37-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 16.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1 June 2003 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 37-39, 41, 46-49 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Segal (US 5,513,512) in view of "Nickel, Cobalt and Their Alloys".

Segal teaches (see col 3, lines 19-34 and 38-55) that equal channel angular extrusion (ECAE) had been applied to cast alloys. Segal goes on to teach that previously there was a problem in that there was no method of determining the final alloy's structure and texture, but that the invention provides a method of plastic deformation (i.e.-ECAE) that obtains various types of structures and textures. Segal teaches (see col 4, lines 30-49) that for a given workpiece, three main directions are selected which determines its orientation during each passage (i.e.-defining a route).

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Therefore, Segal teaches a method for controlling the texture of a cast material alloy where the method includes providing a cast material, defining an ECAE route for defining predetermined shear planes and crystallographic directions in the alloy, selecting a route and subjecting the alloy to a number of passes through the selected routes.

Segal does not teach that prior to the ECAE, the alloy is treated by one of homogenizing, hot forging and solutionizing.

"Nickel, Cobalt and Their Alloys" teaches (see page 76, 1st-2nd column) that a homogenizing heat treatment is applied to non-ferrous cast materials in order to remove segregation in the alloy (i.e.- to insure a homogeneous texture).

Therefore, it would have been within the expected skill of a routineer in the art to have applied homogenization, as taught by "Nickel, Cobalt and Their Alloys", to the alloy of Segal before ECAE processing in order to provide a starting material with as little segregation as possible.

Regarding claim 38, Segal does not teach that after the processing step, the alloy is subjected to further processing. "Nickel, Cobalt and Their Alloys" teaches (see page 230, 2nd column and figure 2) that a heat treatment is applied to non-ferrous workpieces that reduces stresses in work hardened alloys without producing a recrystallized grain structure. One of ordinary skill in the art would have expected the material of Segal to have residual stresses due to the amount of deformation caused by the ECAE. "Stress relieving" and "recovery annealing" are synonyms.

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Therefore, it would have been obvious to one of ordinary skill in the art to have applied the stress relieving of "Nickel, Cobalt and Their Alloys" to the material of Segal because the stress relieving reduces stresses in work hardened alloys without producing a recrystallized grain structure. Time and temperature were known to be result effective variables (see "Nickel, Cobalt and Their Alloys" at page 230, figure 2), therefore, it would have been obvious to one of ordinary skill in the art to have optimized these process parameters to achieve the proper relief of stresses.

Regarding claim 39, because time and temperature were known to be result effective variables (see "Nickel, Cobalt and Their Alloys" at page 230, figure 2), it would have been obvious to one of ordinary skill in the art to perform the stress relieving in two steps at different temperatures to achieve the final desired recovery/recrystallization.

Regarding claim 41, because Segal teaches how to determine the final texture and grain size of the alloy, one of ordinary skill in the art would have expected the process of Segal to inherently possess further steps of ECAE in order to create the desired texture, uniform grain size and texture strength for the alloy.

Regarding claims 46-49, it would have been obvious to one of ordinary skill in the art to have applied the stress relieving of "Nickel, Cobalt and Their Alloys" to the material of Segal because the stress relieving reduces stresses in work hardened alloys without producing a recrystallized grain structure. Time and temperature were known to be result effective variables (see "Nickel, Cobalt and Their Alloys" at page 230, figure 2), therefore, it would have been obvious to one of ordinary skill in the art to have optimized these process parameters to achieve the proper relief of stresses.

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Regarding claim 53, it would have been obvious to one of ordinary skill in the art to have applied the stress relieving of "Nickel, Cobalt and Their Alloys" to the final material of Segal because the stress relieving reduces stresses in work hardened alloys without producing a recrystallized grain structure. "Stress relieving" and "recovery annealing" are synonyms.

4. Claims 40, 42-45 and 50-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Segal (US 5,513,512) in view of "Nickel, Cobalt and Their Alloys" and further in view of Worcester et al (US 5,194,101).

The teachings of Segal and "Nickel, Cobalt and Their Alloys" are discussed above in paragraph no. 3.

Segal does not teach that the alloy is subjected to intermediate annealing and that after the processing step, the alloy is subjected to further processing.

"Nickel, Cobalt and Their Alloys" teaches (see page 230, 2nd column and figure 2) that a heat treatment is applied to non-ferrous workpieces that reduces stresses in work hardened alloys without producing a recrystallized grain structure. One of ordinary skill in the art would have expected the material of Segal to have residual stresses due to the amount of deformation caused by the ECAE. "Stress relieving" and "recovery annealing" are synonyms.

Worcester et al teach (see col. 2, lines 66-68 and claim 1) that stress relief annealing was applied in the metallurgical arts as an intermediate step during a process of several cold deformation steps.

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Therefore, it would have been obvious to one of ordinary skill in the art to have applied an intermediate stress relieving of "Nickel, Cobalt and Their Alloys" as taught by Worcester et al to the material of Segal because the stress relieving reduces stresses in work hardened alloys, thereby reducing the strength/hardness of the alloy, thereby improving workability (for support see figure 2 on page 230 of "Nickel, Cobalt and Their Alloys"). Time and temperature were known to be result effective variables (see figure 2 on page 230 of "Nickel, Cobalt and Their Alloys"), therefore, it would have been obvious to one of ordinary skill in the art to have optimized these process parameters to achieve the proper relief of stresses. It also would have been obvious to one of ordinary skill in the art to have applied a stress relieving of "Nickel, Cobalt and Their Alloys" after the final extrusion step because the stress relieving reduces stresses in work hardened alloys without producing a recrystallized grain structure. The stress relieving is a post-extrusion process that creates the texture, grain size and texture strength of the alloy.

Regarding claims 50 and 51, "stress relieving" and "recovery annealing" are synonyms. Thus, the intermediate and post-extrusion annealing treatments are recovery annealing treatments.

Regarding claim 52, it would have been obvious to one of ordinary skill in the art to have applied an intermediate stress relieving of "Nickel, Cobalt and Their Alloys" as taught by Worcester et al to the material of Segal because the stress relieving reduces stresses in work hardened alloys without producing a recrystallized grain structure. "Stress relieving" and "recovery annealing" are synonyms.

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Response to Arguments

5. Applicant's arguments with respect to claims 37-53 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D Wilkins, III whose telephone number is 703-305-9927. The examiner can normally be reached on M-Th 10:00am-8:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V King can be reached on 703-308-1146. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Harry D Wilkins, III
Examiner
Art Unit 1742

hdw
July 16, 2003

ROY KING *R-K*
SUPERVISORY PATENT
TECHNOLOGY CENTER